Claims

1) Nucleic acid sequence encoding a 61 kD *Brachyspira hyodysenteriae* lipoprotein or a part of said nucleic acid sequence that encodes an immunogenic fragment of said lipoprotein, said nucleic acid sequence or said part thereof having at least 70 % homology with the nucleic acid sequence of the *Brachyspira hyodysenteriae* lipoprotein gene as depicted in SEQ ID NO: 1.

2) Nucleic acid sequence or part thereof according to claim 1, characterized in that the sequence has at least 80 %, preferably 90 %, more preferably 95 % homology with the nucleic acid sequence of the *Brachyspira hyodysenteriae* lipoprotein gene as depicted in SEQ ID NO: 1

3) Nucleic acid sequence encoding a 20 kD *Brachyspira hyodysenteriae* lipoprotein or a part of said nucleic acid sequence that encodes an immunogenic fragment of said lipoprotein, said nucleic acid sequence or said part thereof having at least 70 % homology with the nucleic acid sequence of the *Brachyspira hyodysenteriae* lipoprotein gene as depicted in SEQ ID NO: 3.

4) Nucleic acid sequence or part thereof according to claim 3, characterized in that the sequence has at least 80 %, preferably 90 %, more preferably 95 % homology with the nucleic acid sequence of the *Brachyspira hyodysenteriae* lipoprotein gene as depicted in SEQ ID NO: 3

5) DNA fragment comprising a nucleic acid sequence according to claim 1-4.

6) Recombinant DNA molecule comprising a nucleic acid sequence according to claims 1-4 or a DNA fragment according to claim 5, under the control of a

functionally linked promoter.

7) Live recombinant carrier comprising a nucleic acid sequence according to claims 1-4, a DNA fragment according to claim 5 or a recombinant DNA molecule according to claim 6.

8) Host cell comprising a nucleic acid sequence according to claims 1-4, a DNA fragment according to claim 5, a recombinant DNA molecule according to claim 6 or a live recombinant carrier according to claim 7.

9) An 61 kD *Brachyspira hyodysenteriae* lipoprotein or an immunogenic fragment of said lipoprotein, said lipoprotein or immunogenic fragment thereof having an amino acid sequence homology of at least 70 % with the amino acid sequence as depicted in SEQ ID NO: 2.

10) An 61 kD *Brachyspira hyodysenteriae* lipoprotein or an immunogenic fragment of said lipoprotein, according to claim 9, said lipoprotein or immunogenic fragment thereof having an amino acid sequence homology of at least 80 %, preferably 90 %, more preferably 95 % to the amino acid sequence as depicted in SEQ ID NO: 2.

11) A 61 kD *Brachyspira hyodysenteriae* lipoprotein or an immunogenic fragment thereof, characterized in that it is encoded by a nucleic acid sequence according to claim 1 or 2.

12) A 20 kD *Brachyspira hyodysenteriae* lipoprotein or an immunogenic fragment of said lipoprotein, said lipoprotein or immunogenic fragment thereof having an amino acid sequence homology of at least 70 % to the amino acid sequence as

depicted in SEQ ID NO: 4.

13) A 20 kD *Brachyspira hyodysenteriae* lipoprotein or an immunogenic fragment of said lipoprotein, according to claim 12, said lipoprotein or immunogenic fragment thereof having an amino acid sequence homology of at least 80 %, preferably 90 %, more preferably 95 % to the amino acid sequence as depicted in SEQ ID NO: 4.

14) A 20 kD *Brachyspira hyodysenteriae* lipoprotein or an immunogenic fragment thereof, characterized in that it is encoded by a nucleic acid sequence according to claim 3 or 4.

15) A 61 kD *Brachyspira hyodysenteriae* lipoprotein or an immunogenic fragment thereof, according to claims, 9-11 for use in a vaccine.

16) A 20 kD *Brachyspira hyodysenteriae* lipoprotein or an immunogenic fragment thereof, according to claims, 12-14 for use in a vaccine.

17) Use of a nucleic acid sequence according to claims 1-4, a DNA fragment according to claim 5, a recombinant DNA molecule according to claim 6, a live recombinant carrier according to claim 7, a host cell according to claim 8 or a lipoprotein according to claims 9-14 or an immunogenic fragment thereof for the manufacturing of a vaccine for combating *Brachyspira hyodysenteriae* infection.

18) Vaccine for combating *Brachyspira hyodysenteriae* infection, characterized in that it comprises a nucleic acid sequence according to claims 1-4, a DNA fragment according to claim 5, a recombinant DNA molecule according to claim 6, a live recombinant carrier according to claim 7, a host cell according to claim 8 or a lipoprotein according to claims 9-14 or an immunogenic fragment thereof,

and a pharmaceutically acceptable carrier.

19) Vaccine for combating *Brachyspira hyodysenteriae* infection, characterized in that it comprises antibodies against a lipoprotein according to claims 9-14 or an immunogenic fragment of said lipoprotein, and a pharmaceutically acceptable carrier.

20) Vaccine according to claim 19, characterized in that it comprises an adjuvant.

21) Vaccine according to claim 19 or 20, characterized in that it comprises an additional antigen derived from a virus or micro-organism pathogenic to pigs, an antibody against such an antigen or genetic information encoding said antigen.

22) Vaccine according to claim 21, characterized in that said virus or micro-organism pathogenic to pigs is selected from the group of Pseudorabies virus, Porcine influenza virus, Porcine parvo virus, Transmissible gastro-enteritis virus, Rotavirus, *Escherichia coli, Erysipelo rhusiopathiae, Bordetella bronchiseptica, Salmonella cholerasuis, Haemophilus parasuis, Pasteurella multocida, Streptococcus suis, Mycoplasma hyopneumoniae* and *Actinobacillus pleuropneumoniae.*

23) Method for the preparation of a vaccine according to claims 18-22, said method comprising the admixing of a nucleic acid sequence according to claims 1-4, a DNA fragment according to claim 5, a recombinant DNA molecule according to claim 6, a live recombinant carrier according to claim 7, a host cell according to claim 8, a lipoprotein according to claims 9-14 or antibodies against a lipoprotein according to claims 9-14, and a pharmaceutically acceptable carrier.

24) A diagnostic kit comprising suitable detection means and a nucleic acid sequence according to claims 1-4 or a or primer thereof, or a lipoprotein or immunogenic fragment thereof according to claims 9-14, or antibodies that are reactive with a lipoprotein according to claims 9-14.